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REMARKS

This is a full and timely response to the non-final Official Action mailed **June 12, 2007**. Reconsideration of the application in light of the following remarks is respectfully requested.

Claim Status:

Under a previous Restriction Requirement, claims 32-47 were withdrawn from consideration. To expedite the prosecution of this application, withdrawn claims 32-47 are cancelled by the present paper without prejudice or disclaimer. Applicant reserves the right to file any number of continuation or divisional applications to the withdrawn claims or to any other subject matter described in the present application.

By the present paper, no claims are amended or added, and no additional claims are cancelled. Thus, claims 1-31 are currently pending for further action.

Prior Art:

Claims 1-8 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. patent App. Pub. No. 2003/0063826 to Cevasco et al. ("Cevasco"). This rejection is respectfully traversed for at least the following reasons.

Claim 1 recites: "A method of forming an interface between components having different rates of volumetric expansion, said method comprising forming an interface surface of said interface with respect to a center of growth such that slippage occurs at said interface between said components during volumetric expansion." Applicant notes that claim 1 recites a "method of *forming* an interface," particular the act of creating an interface "with respect to

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a center of growth such that slippage occurs at said interface between said components during volumetric expansion.”

In contrast, Cevasco illustrates an interface (36) between a housing (12) and a bearing set (14). (Action of 6/12/07, p. 3). However, Cevasco is entirely silent as to anything about how that interface is formed. The Office Action argues that the “Cevasco reference disclosed forming an interface.” (*Id.*). This appears to be incorrect. To support the argument, the Action cites Fig. 3 and paragraphs [0016], [0019] and [0020] of Cevasco. (*Id.*). Fig. 3 illustrates the interface (36), but teaches nothing about how the interface was designed or formed. The cited paragraphs likewise describe the interface and its operation. However, the reference is absolutely silent as to how the interface was designed or formed.

With respect to an anticipation rejection, MPEP 2131 states: “The identical invention must be shown [in the prior art] in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Cevasco comes nowhere near this standard.

Specifically, claim 1 recites: “A method of forming an interface between components having different rates of volumetric expansion, said method comprising forming an interface surface of said interface with respect to a center of growth such that slippage occurs at said interface between said components during volumetric expansion.” In contrast, Cevasco does not teach, suggest or even mention a “center of growth.” Consequently, Cevasco cannot teach or suggest a method of forming an interface that is with respect to a center of growth and “such that slippage occurs at said interface between said components during volumetric expansion.”

In short, Cevasco does not teach or suggest *any* of the subject matter of claim 1. “A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the

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claim is found, either expressly or inherently described, in a single prior art reference.”

Verdegaal Bros. v. Union Oil Co. of California, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987).

See M.P.E.P. § 2131. For at least these reasons, the rejection based on Cevasco of claim 1 and its dependent claims should be reconsidered and withdrawn.

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. Specific, non-exclusive examples follow.

Claim 2 recites:

The method of claim 1, further comprising:
defining an axis of volumetric expansion for a first component;
projecting a sphere with a center on said axis; and
defining the center of said sphere as said center of growth.

Claim 3 recites:

The method of claim 2, further comprising:
projecting a perimeter of said first component onto said sphere to define a projection line; and
forming said interface surface based on a plurality of planes each of which includes said center of growth, a point on said projection line and a tangent to that point on said projection line.

Claim 4 recites:

The method of claim 3, wherein said forming said interface surface further comprises forming said interface surface tangent to all of said planes in said plurality of planes.

Claim 5 recites:

The method of claim 3, further comprising
defining a second axis of volumetric expansion for a second component;
projecting a sphere with a center on said second axis; and
defining the center of said sphere as said center of growth.
projecting a perimeter of said second component onto said sphere to define a second projection line; and

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forming a second interface surface in said assembly based on a plurality of planes each of which includes said center of growth, a point on said second projection line, and a tangent to that point on said second projection line.

Claim 6 recites:

The method of claim 5, wherein said forming said interface surface further comprises forming said interface surface tangent to all of said planes in said plurality of planes.

Claim 7 recites:

The method of claim 3, further comprising forming a second component having a complimentary interface surface that is configured to interface with said interface surface.

Claim 8 recites:

The method of claim 7, wherein said complimentary interface surface of said second component substantially corresponds to said interface surface.

In contrast, Cevasco does not teach, suggest or even mention any of this subject matter. The Office Action argues that "[i]t is implicit that the interface is formed by [these] method steps." (Action of 6/12/07). This is unreasonable.

The argument of the Action amounts to an allegation that all these steps in these dependent claims are inherent in Cevasco merely because Cevasco has illustrated an interface between two components. Clearly, this is insufficient to support a rejection of Applicant's claims.

"To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from

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a given set of circumstances is not sufficient." *In re Robertson*, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (citations omitted). "[T]he examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (BPAI 1990) (emphasis in original); see also, MPEP § 2112 (quoting *Levy*).

There is no reasonable argument, nor does the Office Action attempt to make one, that the method steps of claims 2-8 are "necessarily present" in the interface described by Cevasco. As one of skill in the art would appreciate, the interface of Cevasco may have been formed by any of a myriad of methods that do not include the subject matter claimed by Applicant.

Again, "[a] claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. In the present case, the Office Action has failed to demonstrate that any of the subject matter from claims 2-8 is anticipated by Cevasco. For at least these additional reasons, the rejection based on Cevasco of claims 2-8 should be reconsidered and withdrawn.

Claims 12-23 were rejected as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 5,374,086 to Higgins ("Higgins"). For at least the following reasons, this rejection is respectfully traversed.

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Claim 12 recites:

A method of forming a thermally cycled component assembly, comprising:
forming a first component including:

- determining dimensional characteristics of said first component,
- defining an axis of volumetric expansion for said first component,
- projecting a sphere having a center on said axis,
- defining the center of said sphere as a center of growth of said first component,
- projecting a perimeter of said component onto said sphere to define a projection line, and

- forming an interface surface of said first component based on a plurality of planes each of which includes said center of growth, a point on said projection line and a tangent to that point on said projection line.

In contrast, Higgins fails to teach or suggest any of this subject matter. As was the case above with Cevasco, Higgins illustrates a "ball joint seal for vehicle exhaust system." (Higgins, title). Again, the Office Action cites a portion of Higgins, col. 2, lines 31-42, that describes the articulating ball joint, but teaching nothing with regard to how the joint is formed. (Action of 6/12/07, p. 4).

As above, the Office Action does not attempt to identify the various method steps recited in claim 12 in the teachings of Higgins. Rather, the Action again argues that "[i]t is implicit that the interface between the spherical housing and the semispherical flange is formed by the [claimed] method steps." (*Id.*). As demonstrated above, such an argument is clearly unreasonable.

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.' 'Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (citations omitted). "[T]he examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent

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characteristic *necessarily* flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (BPAI 1990) (emphasis in original); see also, MPEP § 2112 (quoting *Levy*):

In the present case, there is no reasonable argument, nor does the Office Action attempt to make one, that the method steps of claim 12 are "necessarily present" in the joint described by Higgins. As one of skill in the art would appreciate, the joint of Higgins may have been formed by any of a myriad of methods that do not include the steps of claim 12.

Again, "[a] claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). See M.P.E.P. § 2131. In the present case, the Office Action has failed to demonstrate that any of the subject matter of claim 12 is anticipated by Cevasco. For at least these additional reasons, the rejection based on Higgins of claim 12 and its dependent claims should be reconsidered and withdrawn.

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. Without being redundant, Applicant wishes to note that each of claims 13-23, which were rejected based on Higgins, recite additional steps of Applicant's method that are not taught or suggested by Higgins.

With respect to each claim, the Office Action makes the unreasonable allegation that the subject matter is "implicit" or inherent in Higgins without any supporting explanation as to why that must be the case. Consequently, for at least this additional reason, the rejection of each of claims 13-23 should be promptly reconsidered and withdrawn.

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Claims 1, 9-13, 17, 23-29 and 31 were alternatively rejected under 35 U.S.C. § 103(a) over the combined teachings of U.S. Patent No. 6,677,069 to Piascik et al. ("Piascik") and Higgins. For at least the following reasons, this rejection is respectfully traversed.

As noted above, independent claim 1 recites a method of forming an interface. Independent claim 12 recites a method of forming a thermally cycled component assembly that also includes "forming an interface surface." In contrast, as demonstrated above, Higgins has no relevance to a method of forming an interface or component assembly comprising an interface as claimed. Similarly, Piascik is devoid of any teachings relevant to Applicant's claimed methods.

The Office Action concedes that "Piascik does not expressly teach a method of forming an interface." (Action of 6/12/07, p. 7). Consequently, the Action cites again to Higgins. (*Id.*). The Action repeats the unfounded conclusion that, with respect to Higgins, "[i]t is implicit that the interface surface is formed by the [claimed] methods." This has been thoroughly disproved above. Consequently, the combined teachings of Piascik and Higgins utterly fail to teach or suggest any of the subject matter of Applicant's claims.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Piascik and Higgins, did not include the methods recited in claims 1 and 12 or any of their respective dependent claims. The subject matter disclosed and claimed by Applicant appears to be entirely beyond the scope of the cited prior art.

These difference between the cited prior art and the claimed subject matter are significant because Applicant's claims provide a method of making an interface for a

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thermally cycled component assembly that minimizes or eliminates stress due to differential expansion rates of the components interfaced. (Applicant's specification, paragraph 0017). These advantages provided by Applicant's methods do not appear to have been available in the prior art.

Consequently, Piascik and Higgins cannot support a rejection of any of Applicant's claims under § 103(a) and *Graham*. Therefore, the rejection based on Piascik and Higgins should be reconsidered and withdrawn.

Claim 30 was rejected under 35 U.S.C. § 103(a) over the combined teachings of U.S. Piascik, Higgins and U.S. Patent No. 5,799,951 to Anderson et al. This rejection is respectfully traversed for at least the same reasons given above with respect to the patentability of claim 12.

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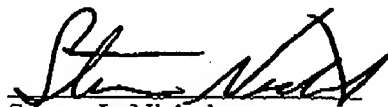
Conclusion:

In view of the following arguments, all claims are believed to be in condition for allowance over the prior art of record. Therefore, this response is believed to be a complete response to the Office Action. However, Applicants reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

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I hereby certify that this correspondence is being transmitted to the Patent and Trademark Office facsimile number **571-273-8300** on **September 12, 2007**. Number of Pages: **21**


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